

# Ballast Water Management Compliance in California: An Eleven Year Perspective

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**Marine Invasive Species Program**  
**California State Lands Commission**

**MISP Customer Service Meeting**  
**August 2015**



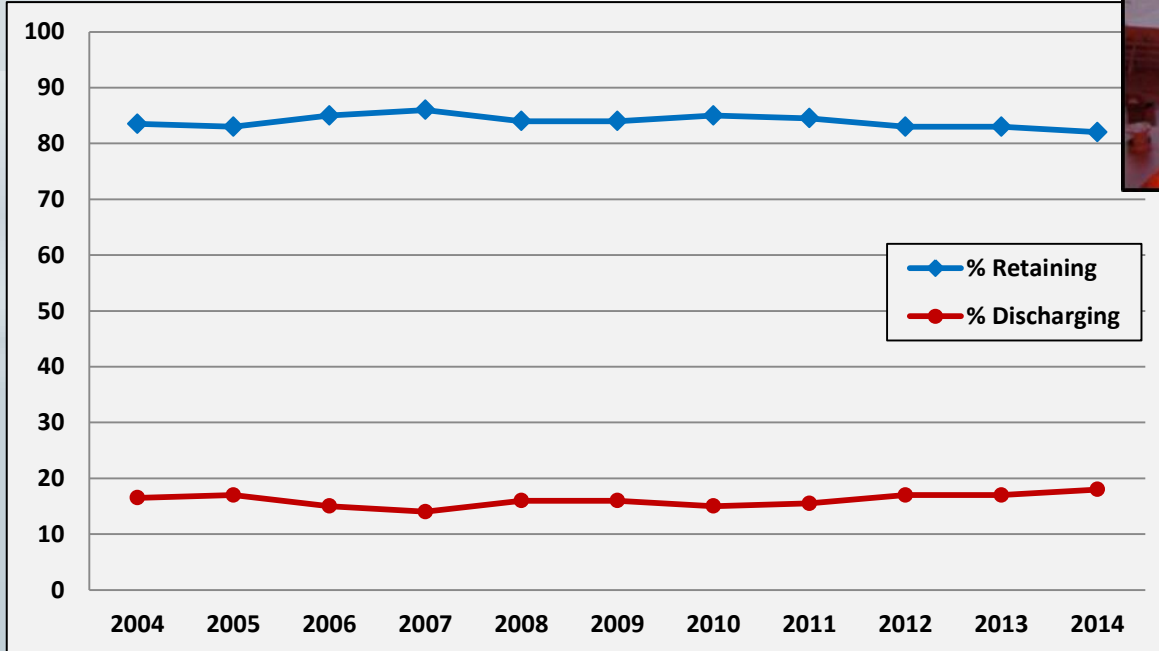
# Outline

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- How Compliance is Assessed
- Brief Intro to GIS Software
- 11 Years of Compliance Data
- Overview of Compliance Regulations
- Questions

# Ballast Water Management Options

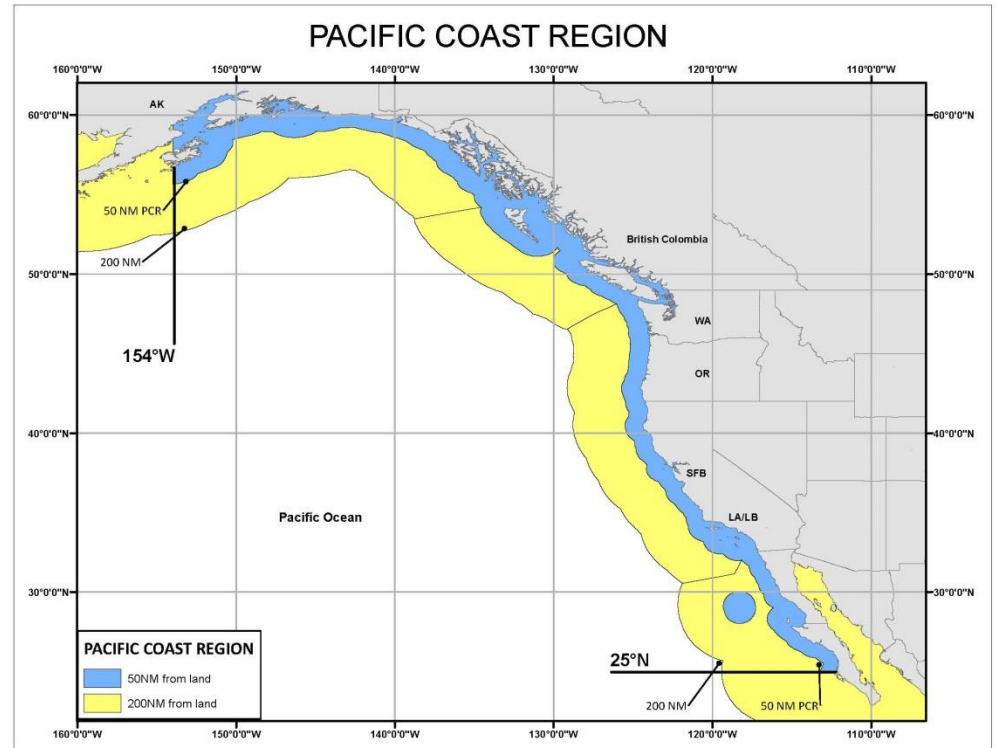
- Retain all ballast on board/no discharge
- Discharge to a shore or barge-based reception facility (none currently exist)
- On board ballast water treatment systems
- Ballast water exchange (BWE)
  - 200 NM from land (non-PCR arrivals)
  - 50 NM from land (PCR arrivals)



# Current California BWE Requirements

- ***Ballast Water Exchange Requirements:***

- As of 2006, vessels discharging ballast in CA must manage in accordance with the rules of the Pacific Coast Region (PCR)



- Arrivals from within PCR, ballast water from within: Exchange >50 nm
- Arrivals from within PCR, ballast water from outside: Exchange >200 nm
- Arrivals from outside PCR: Exchange >200 nm

***There are no exempted commercial vessels (e.g. Domestic oil tankers)***

# Evaluating Compliance

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## ***Ballast water reporting forms:***

- Forms contain information on source, exchange and discharge locations whether in port or open ocean (Jackie Mackay, next talk)
- Quality controlled database extending back to 2002

## ***On board ship inspections:***

- 25% of arrivals are mandated to be inspected by SLC inspectors
- Perform outreach, check ballast logs/management plan, verify exchange locations, test ballast salinity

## ***GIS analysis:***

- Evaluates compliance for a large number of vessels
- Identifies potential underlying reasons for violations
- Great toolbox for analyzing trends and patterns of very large datasets



# So, What is GIS?

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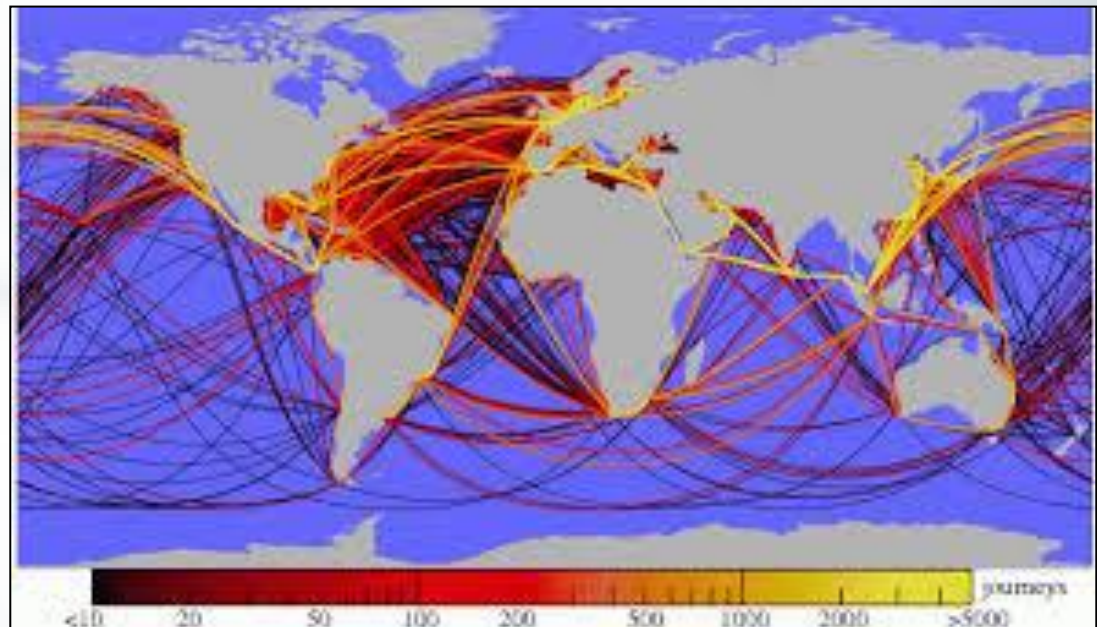
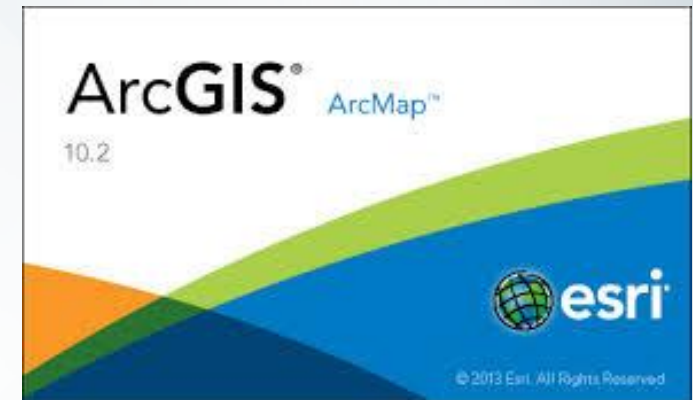
A geographic information system (GIS) is a system designed to:

- capture,
- store,
- manipulate,
- analyze,
- manage, and
- present

large amounts of spatial or geographical data.

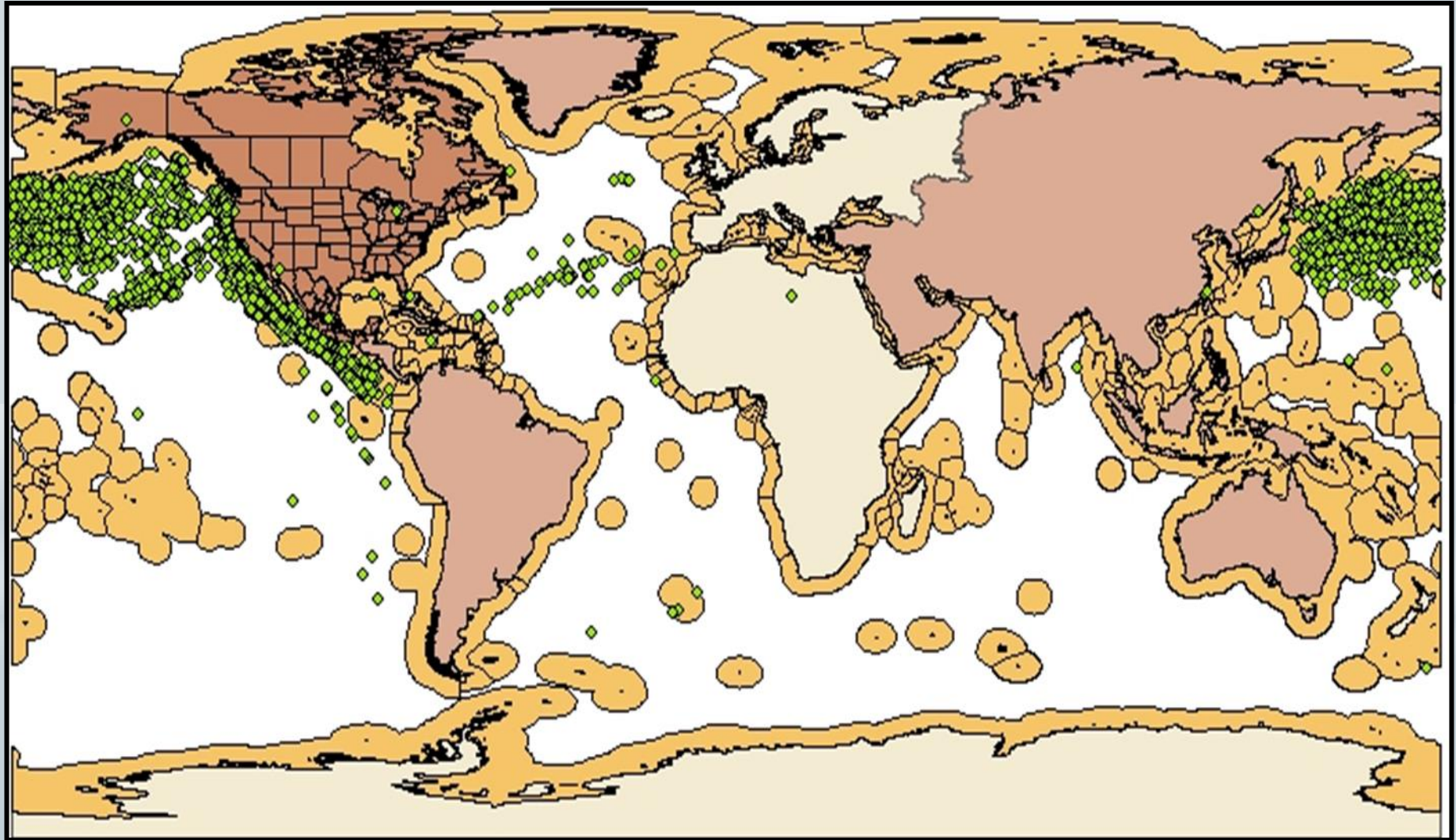


- Quarterly GIS compliance analyses are run using ArcGIS 10.2 software
- Began in 1<sup>st</sup> quarter of 2014
- Results are used both for informational and enforcement purposes
  - Violation letters are sent to owners and agents of noncompliant vessels



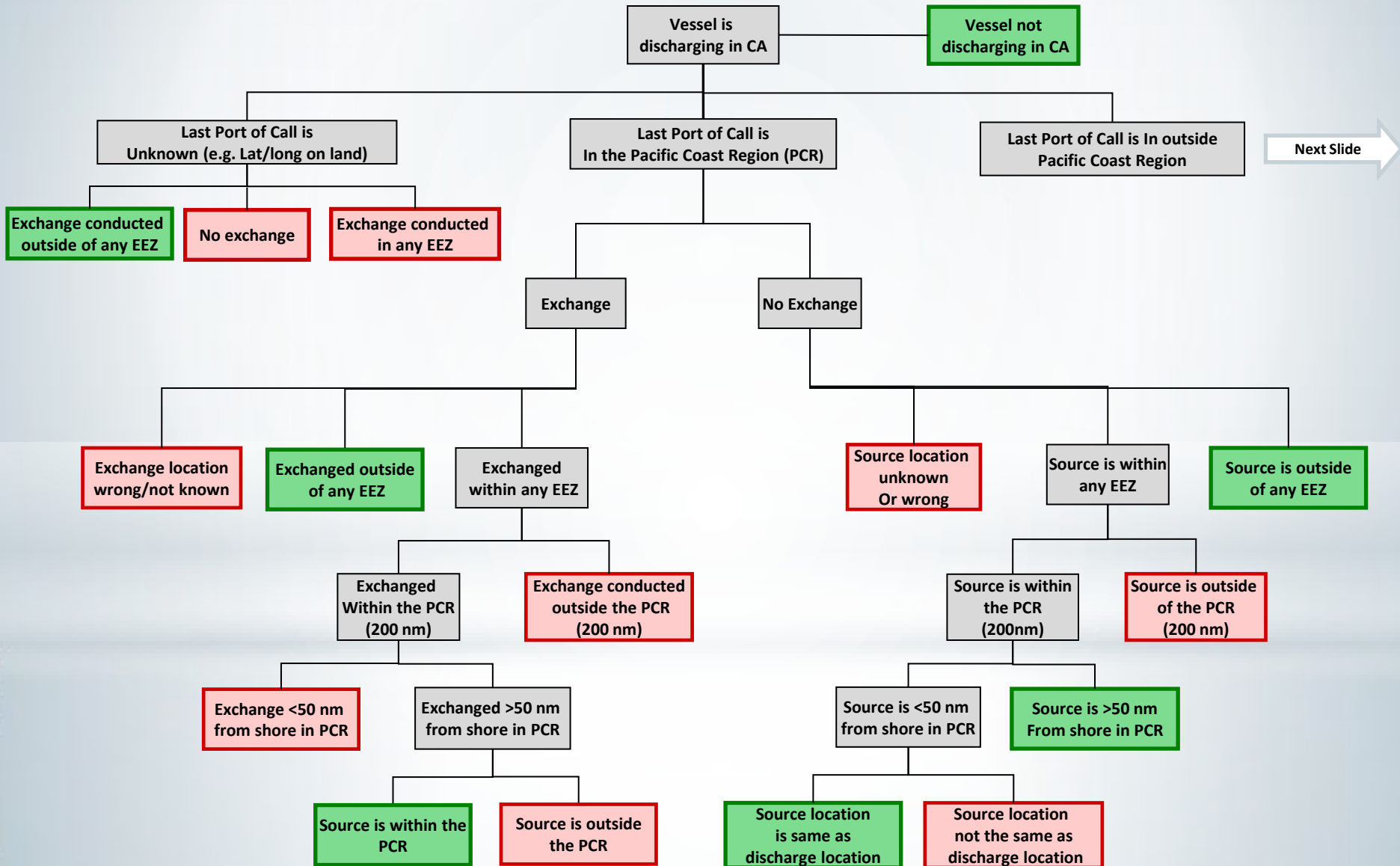
In 2014:

- 1,510 vessel arrivals discharged a total of 9,875 separate ballast water tanks



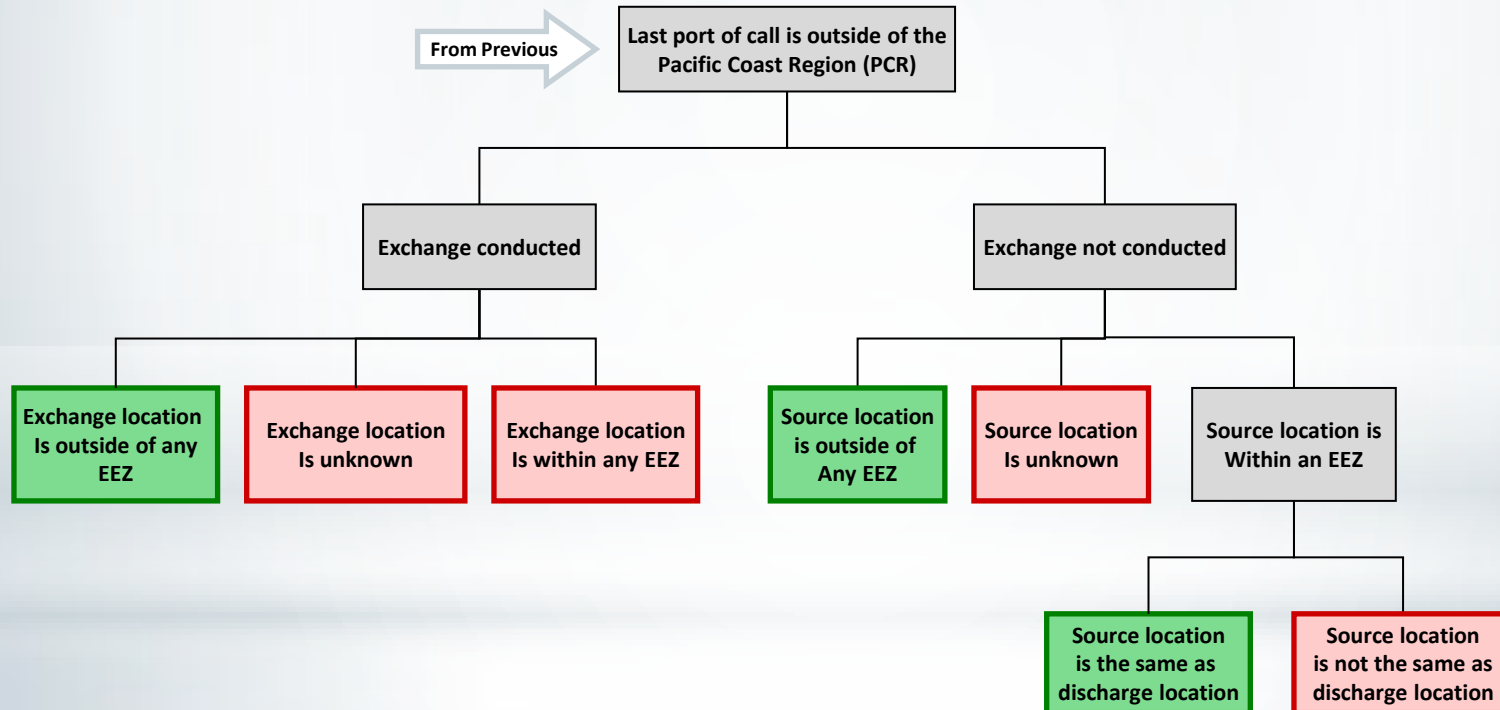


# Compliance Evaluation Flowchart



# Compliance Evaluation Flowchart

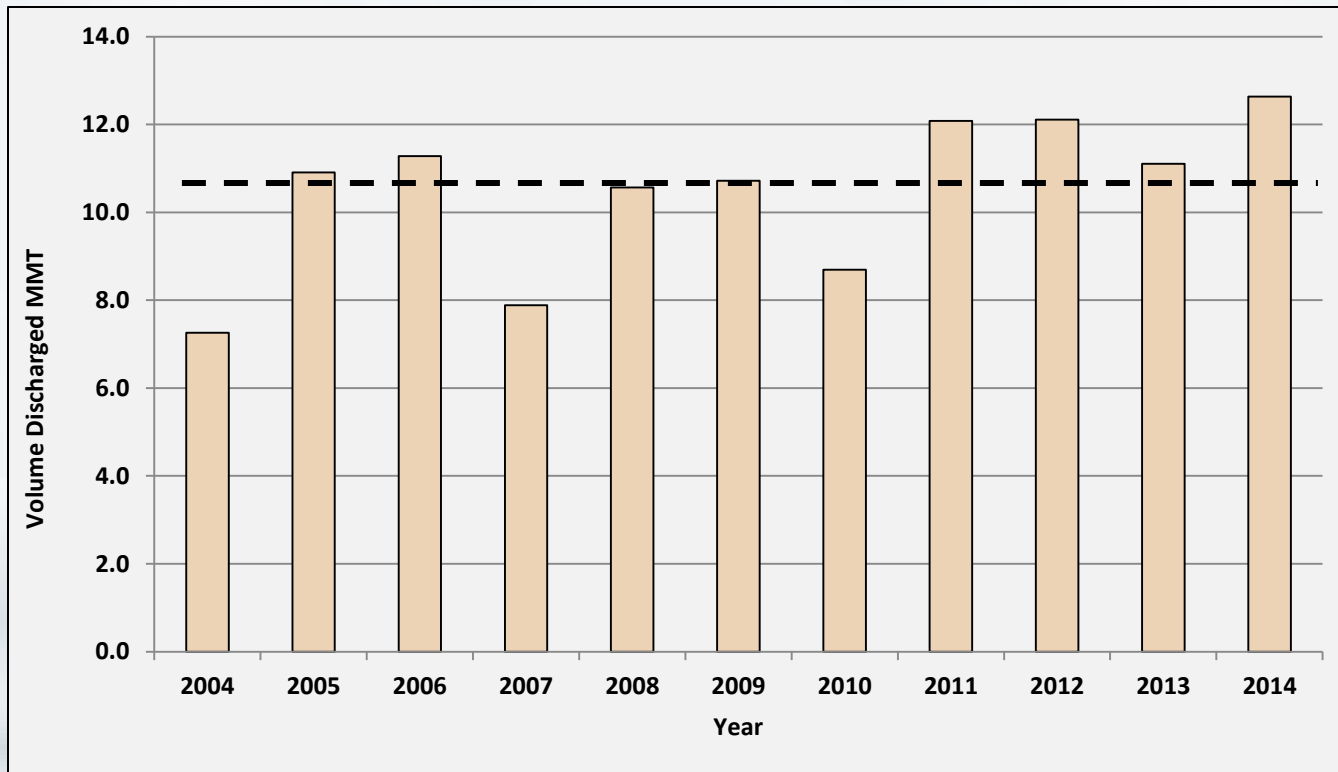
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# Compliance Data

# Total Discharge

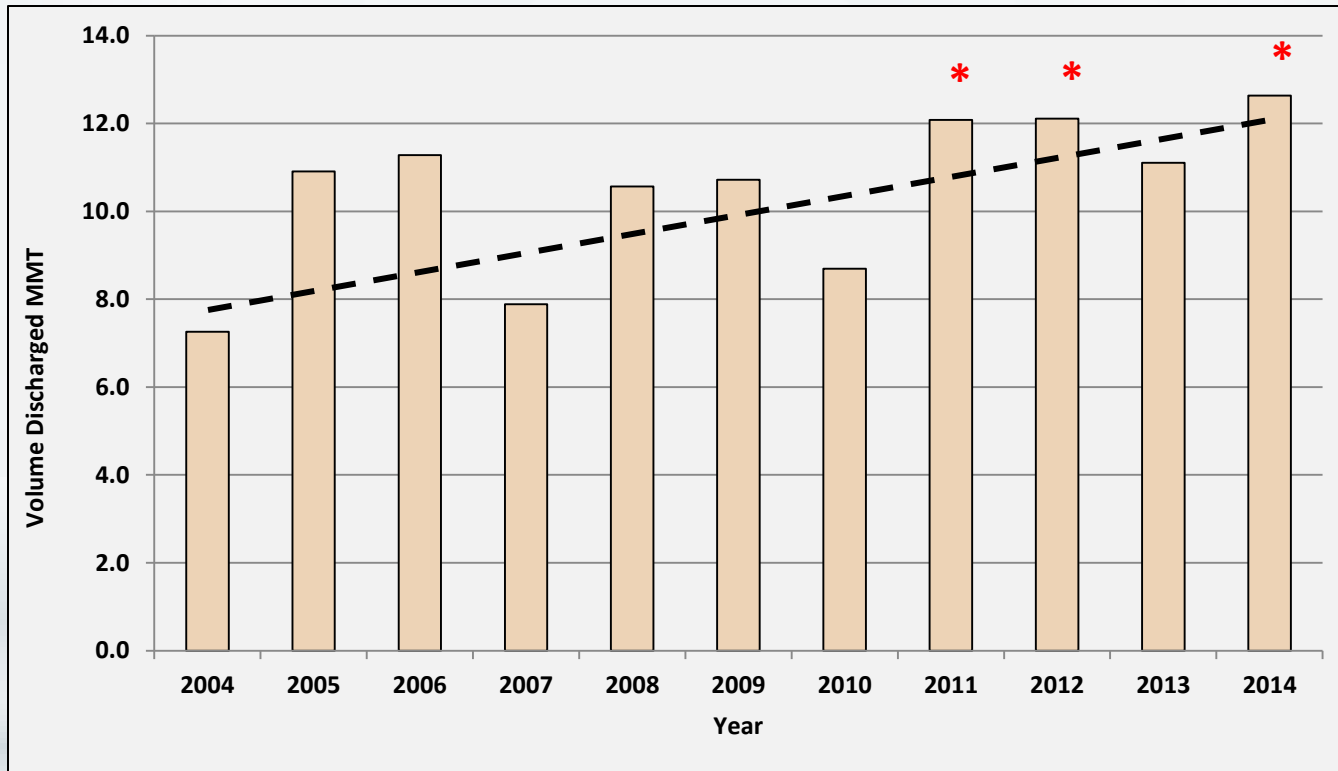
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- Average discharge of 10.5 MMT per year

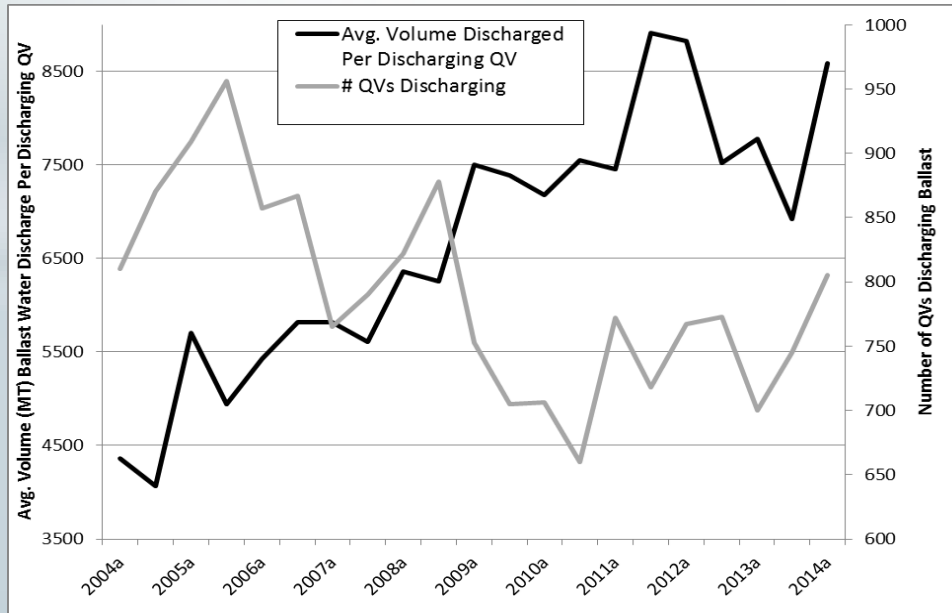
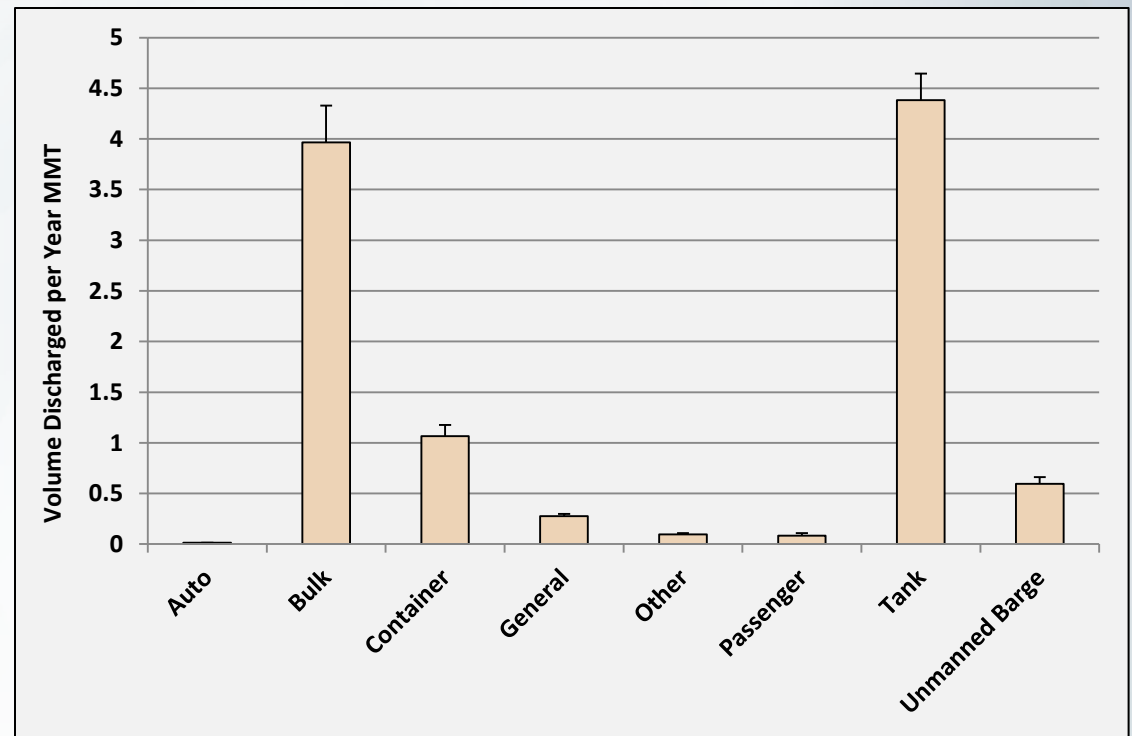


# Total Discharge

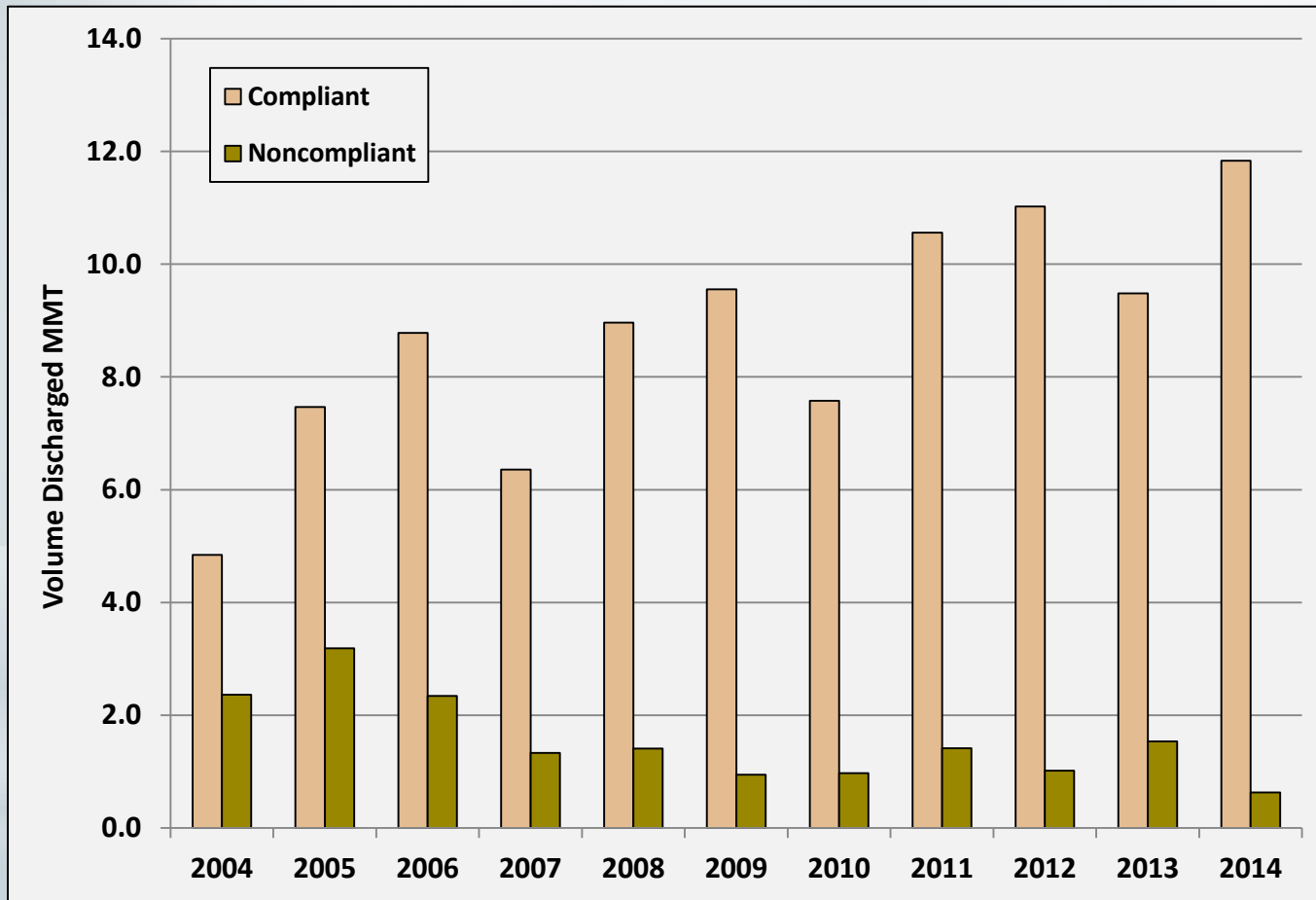


- Average discharge of 10.5 MMT per year
- Volume is increasing over time
- 3 out of last 4 years have seen highest reported discharge amounts since the inception of MISP

- Tankers and bulk vessels account for 88.7% of the ballast water discharge volume



# Compliant vs. Noncompliant



↑  
PCR

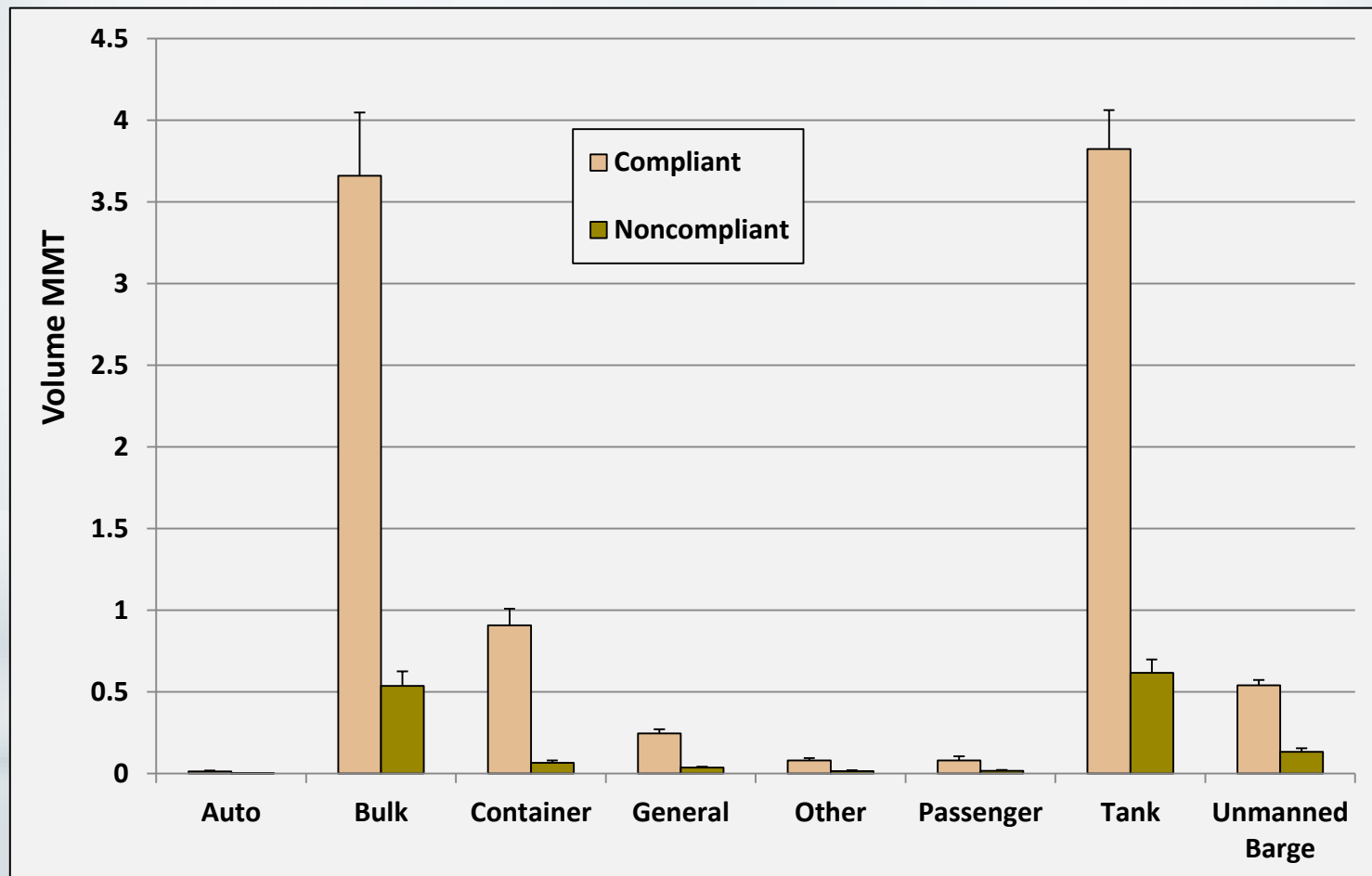


Compliant  
discharges

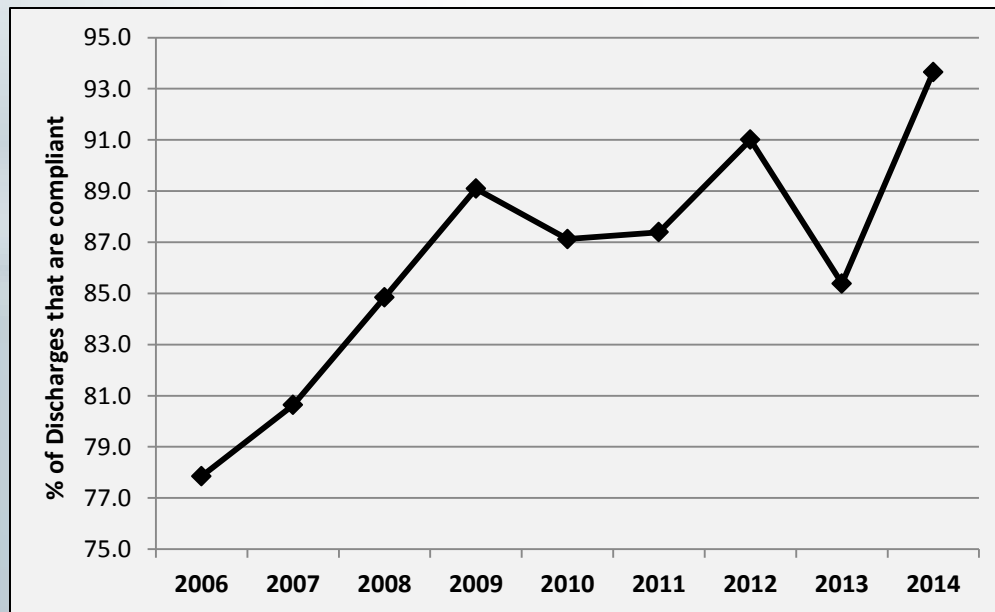
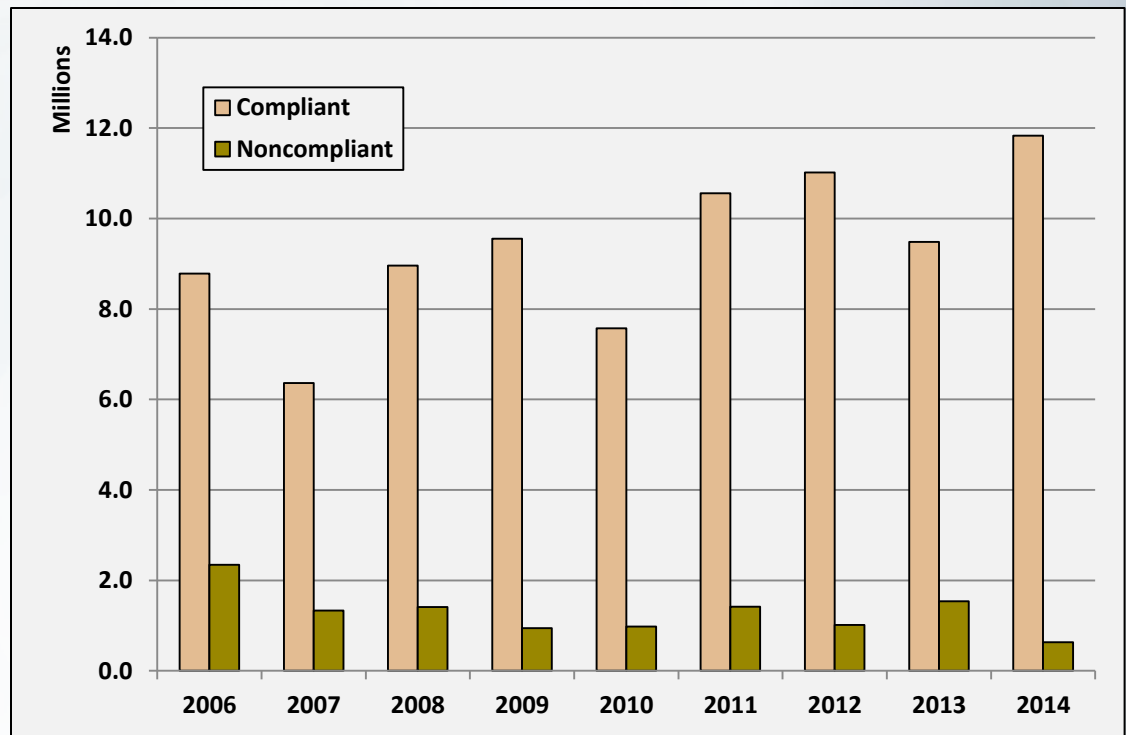


Noncompliant  
discharges

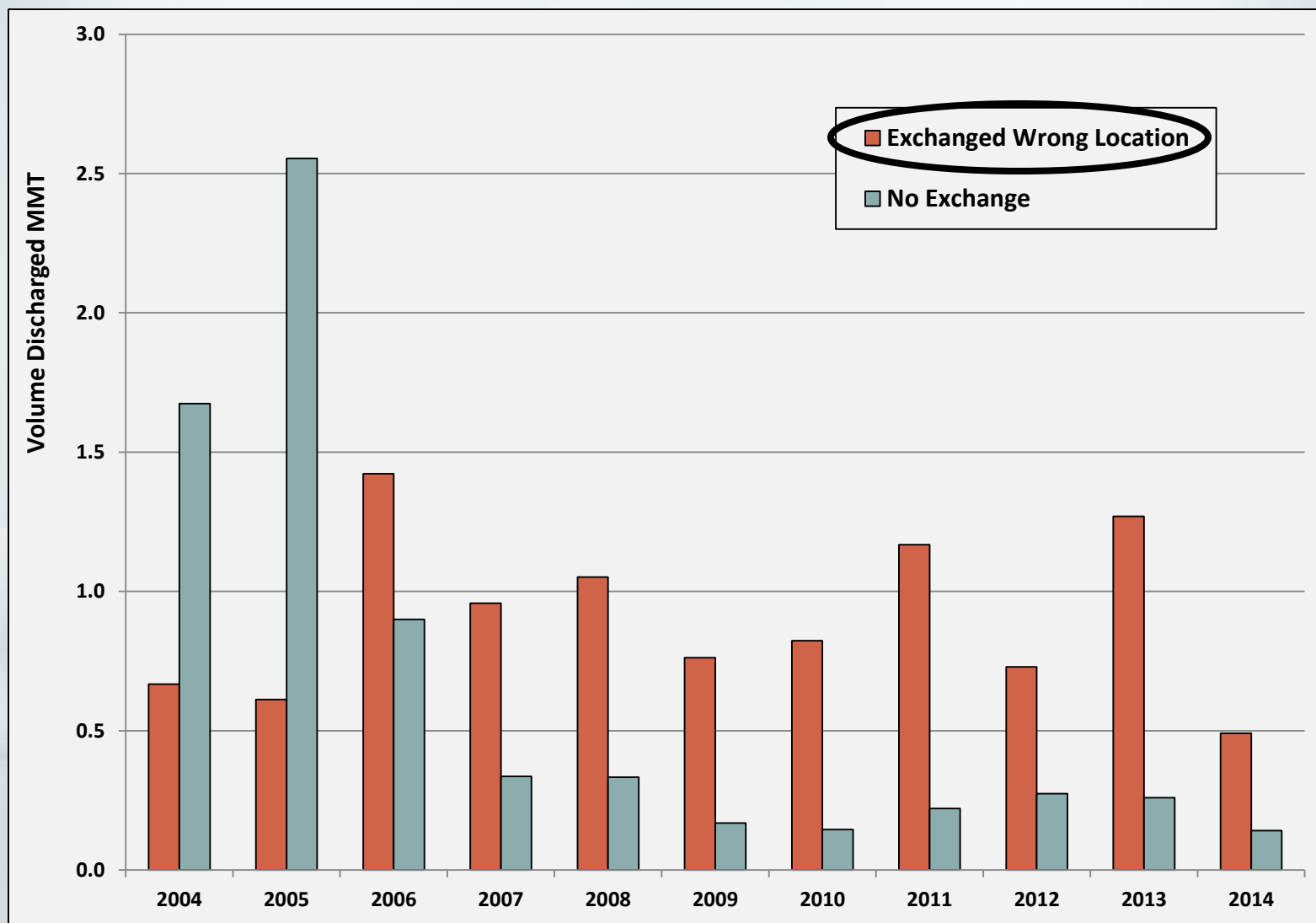
# Discharge by Vessel Type







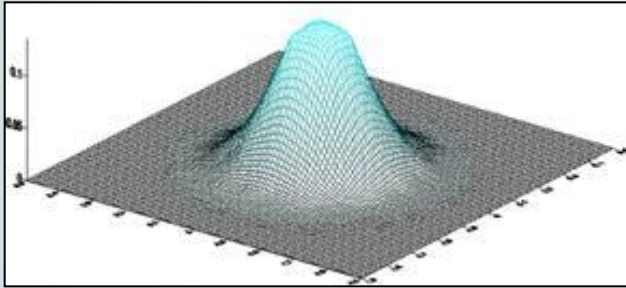
Since 2009, average compliance rate of 89%



↑  
PCR

# Noncompliant Ballast Water Exchange: GIS

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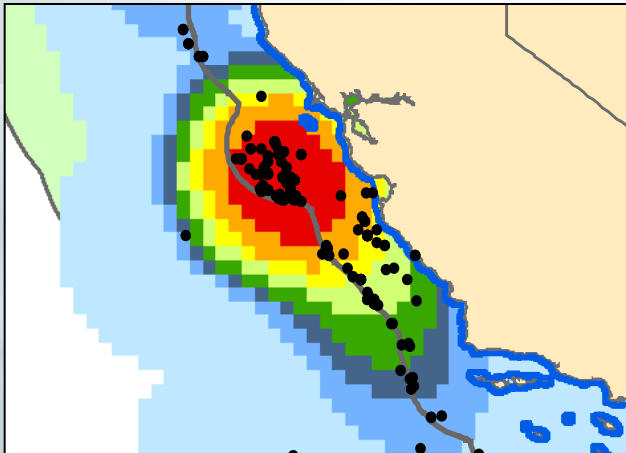


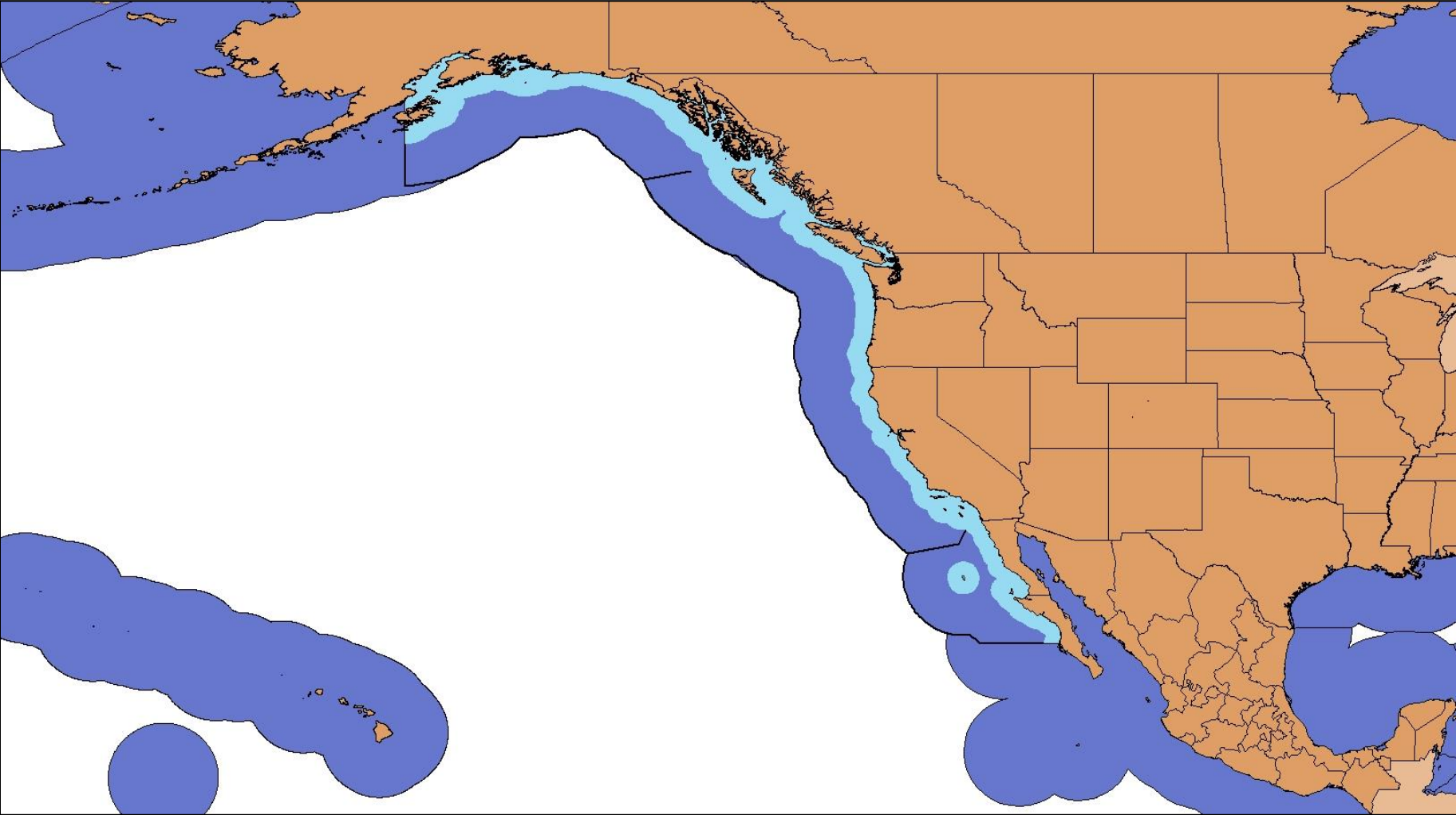
**Where are illegal exchanges concentrated/clustered?**

**What vessels are responsible?**

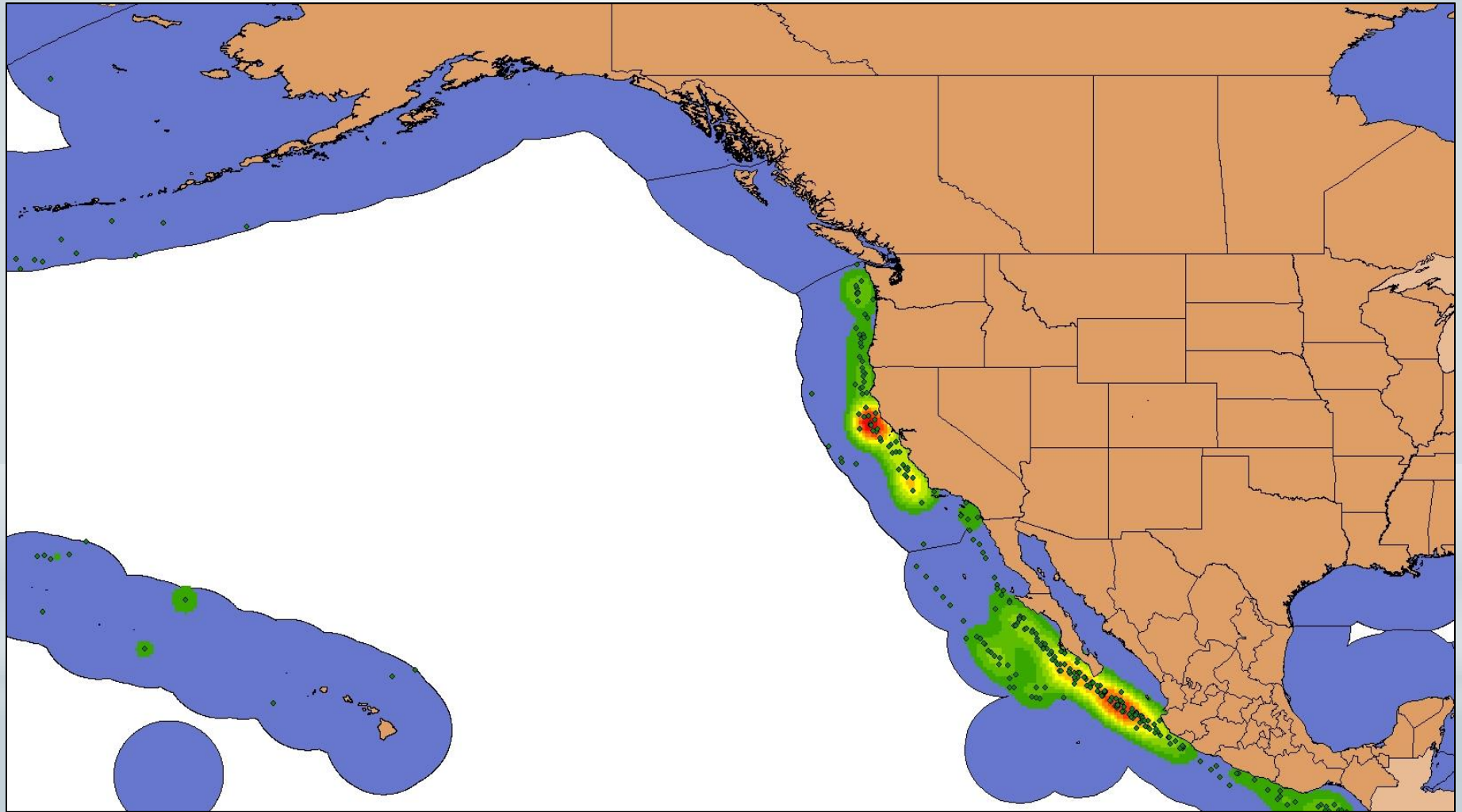
**ESRI ArcGIS/ArcMap 10.2**

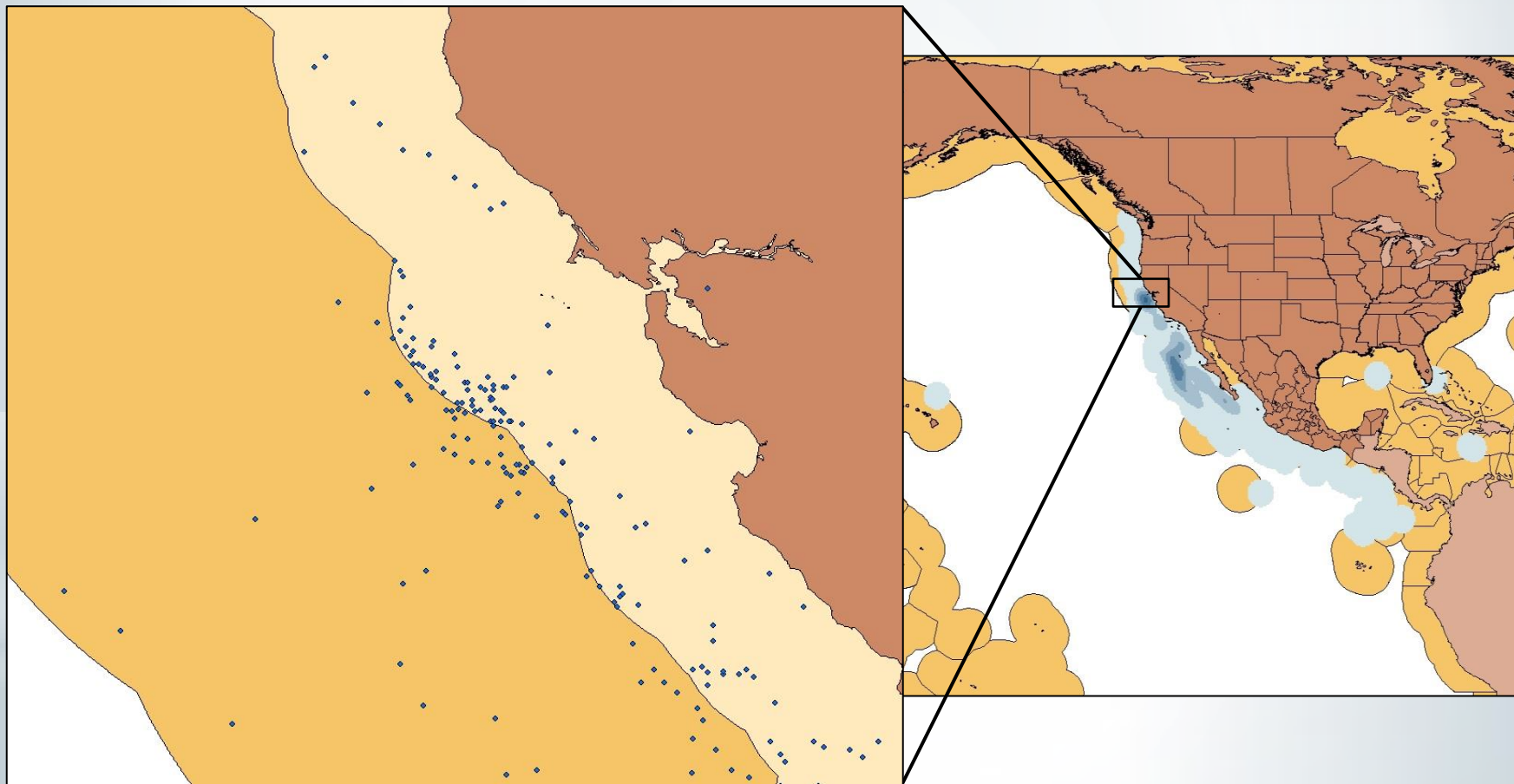
- Kernel Density Function (Spatial Analyst) - Calculates density of “events” per unit area
- Inputs:
  - Point locations of illegal exchanges
  - Search radius: 2 degrees
  - Cell Size: 0.2 degrees
  - Weighted by ballast water discharge volumes

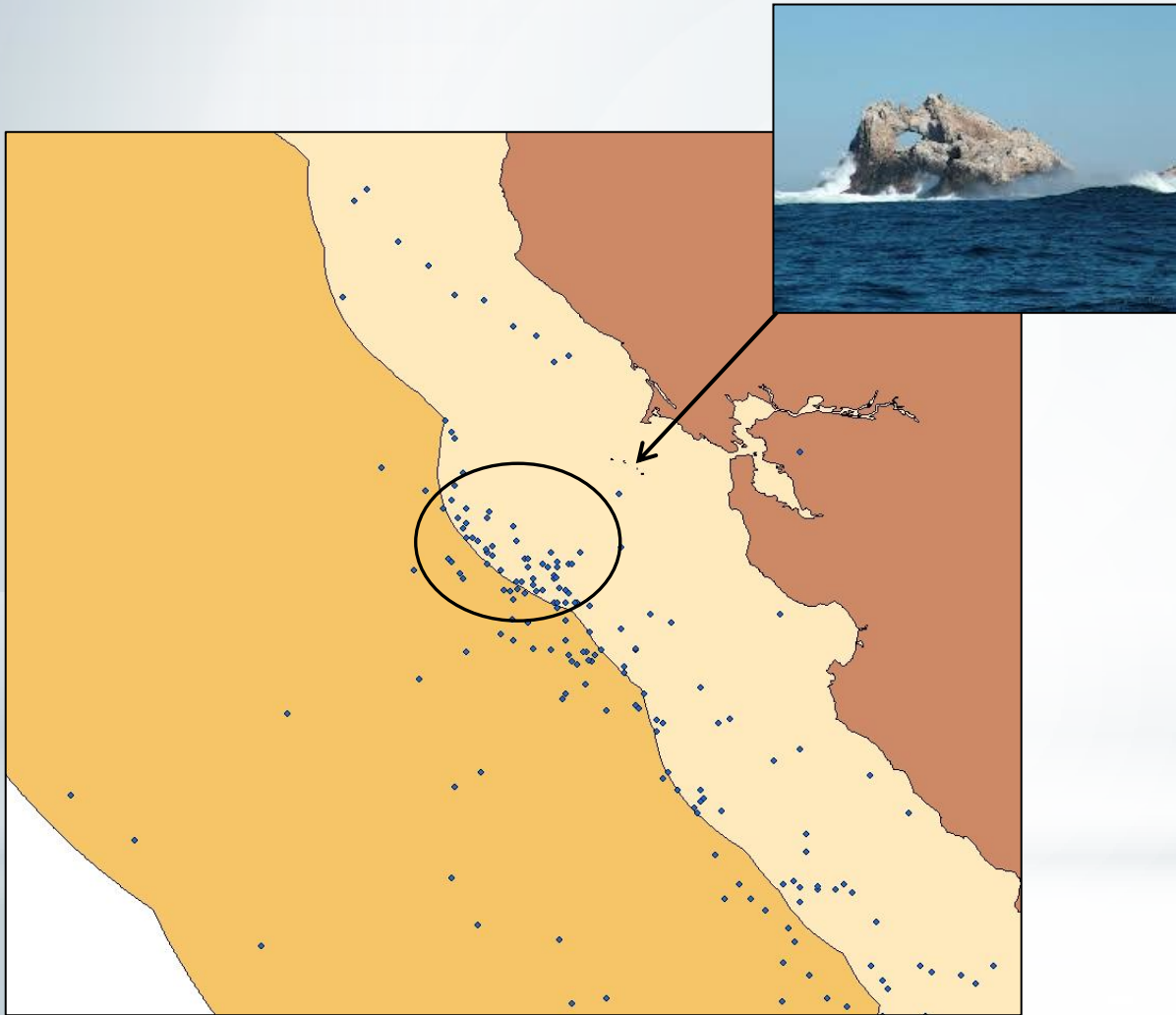




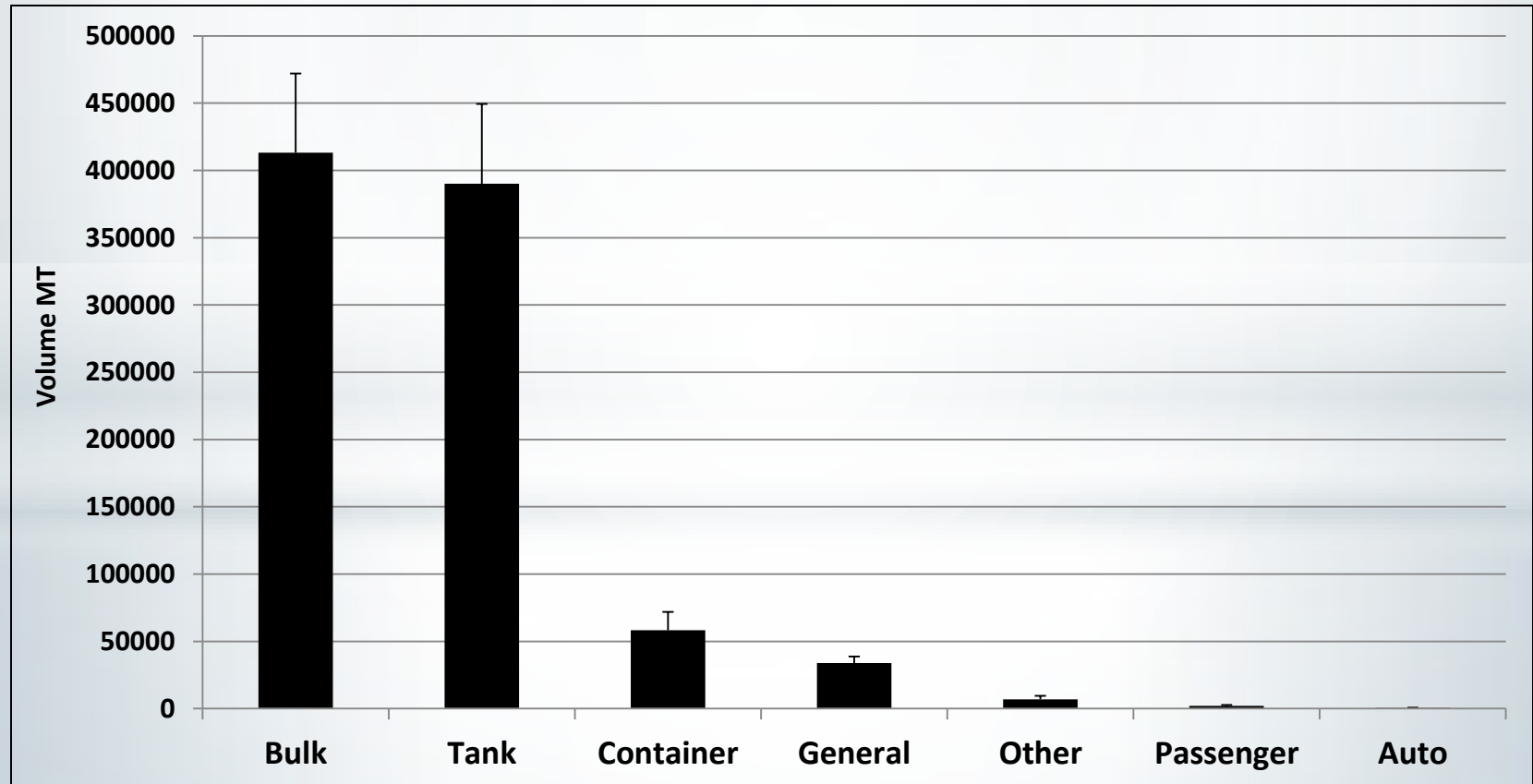




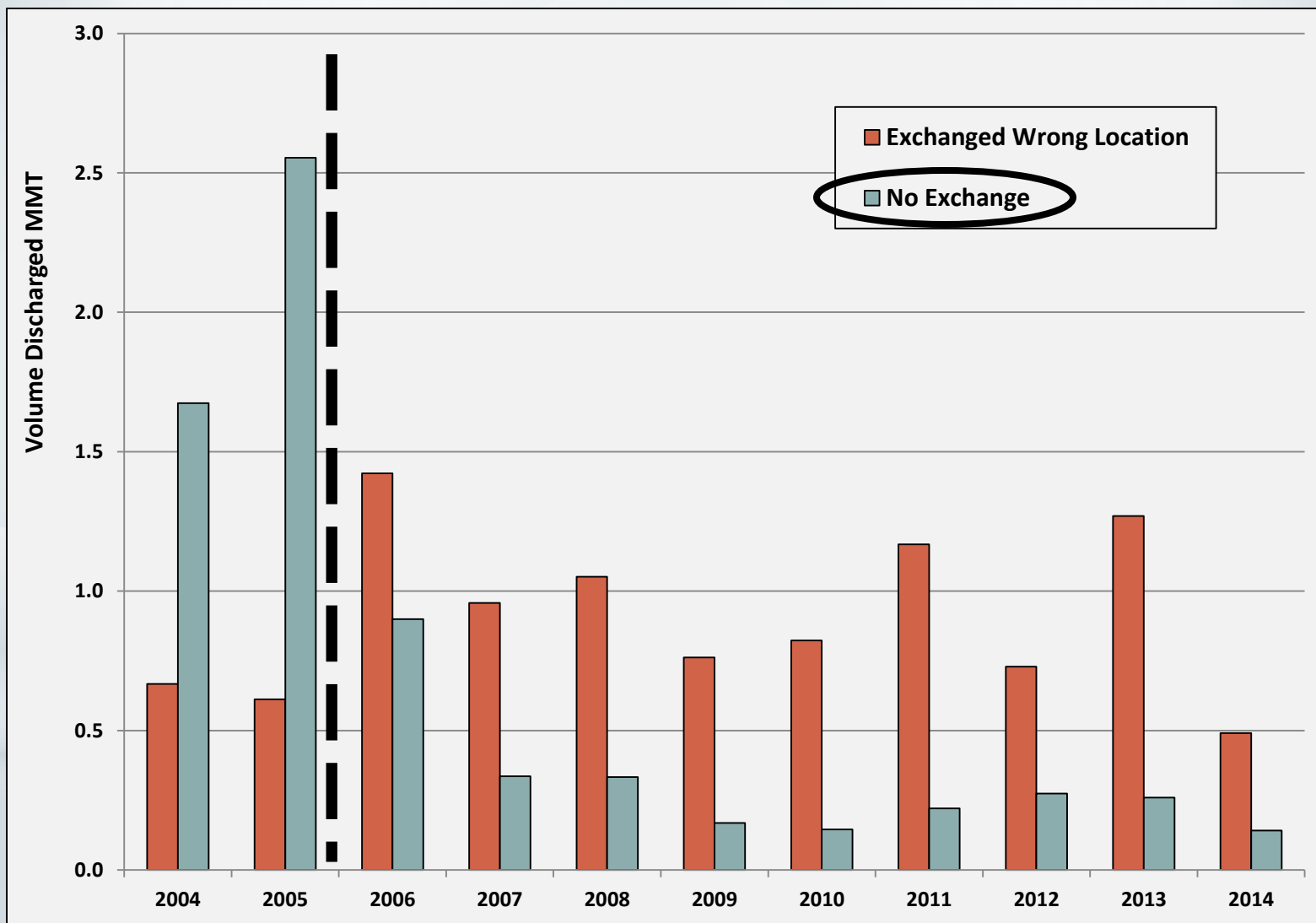




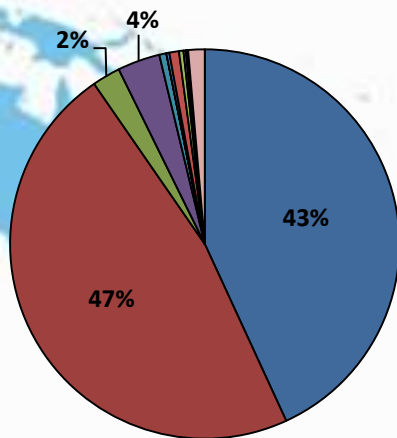
- Incorrect exchange violations are often due to ships being too close to islands
- Legal exchange must occur at the proper distance from ANY land
- Often misinterpreted as distance from mainland coast







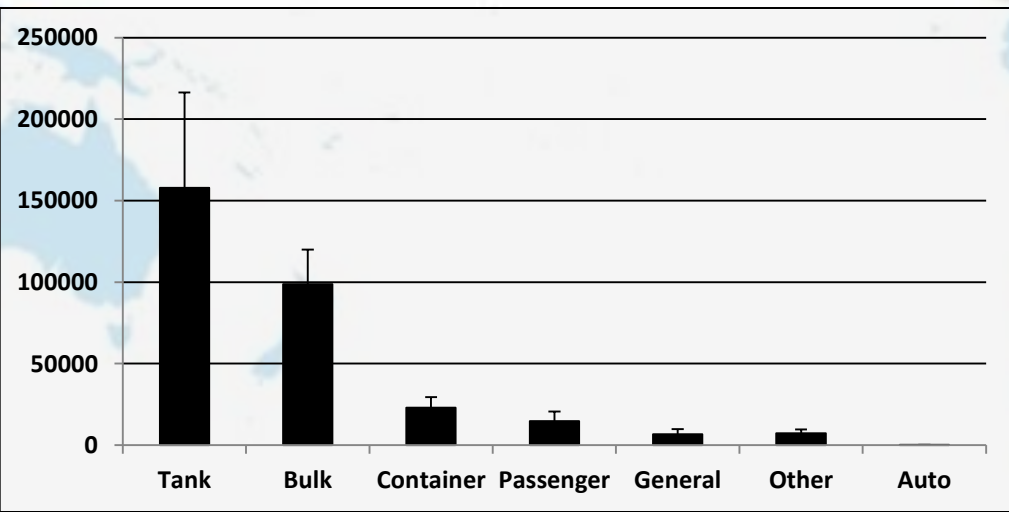
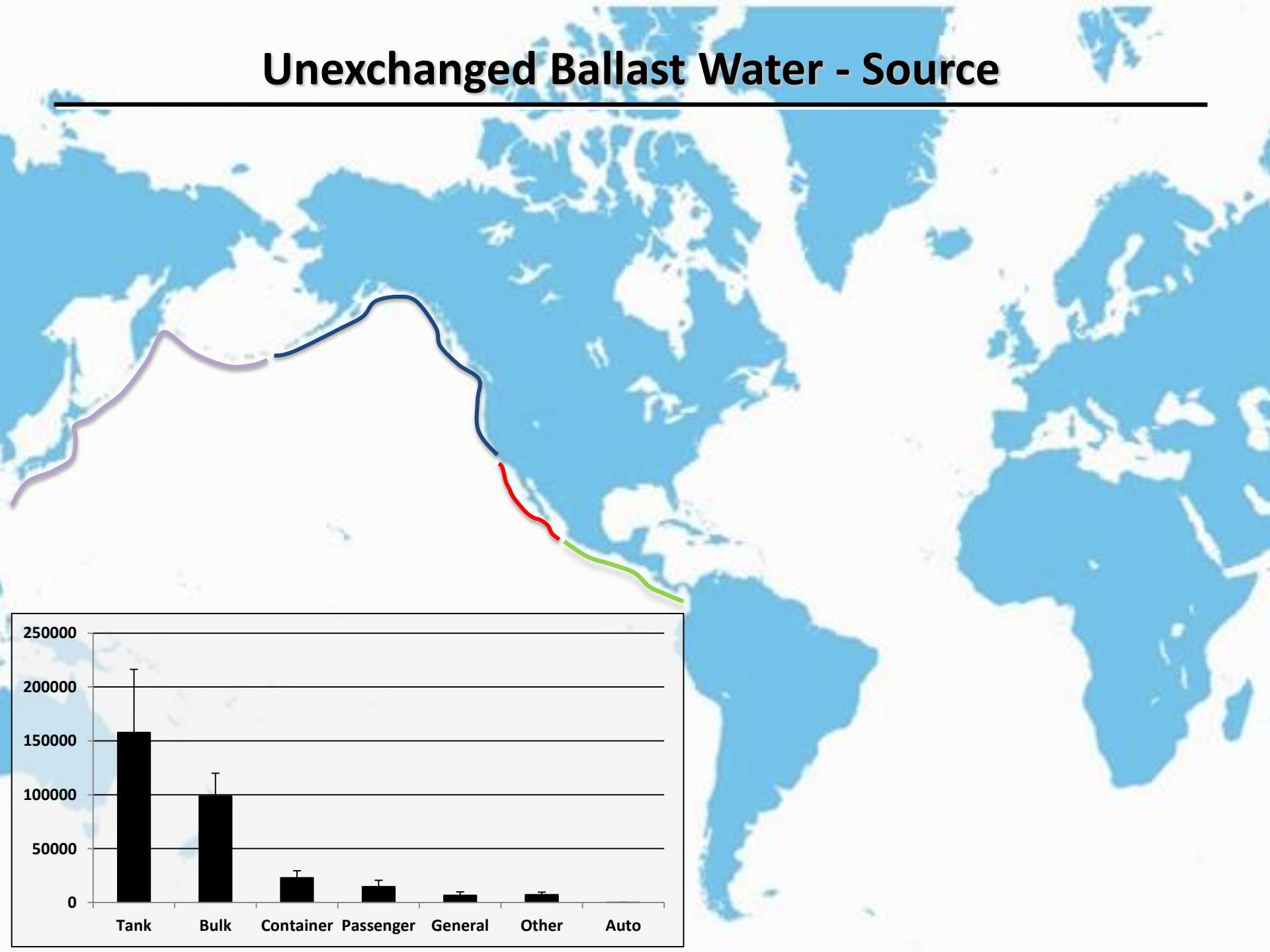
# Unexchanged Ballast Water - Source



- Cold Temperate East Pacific
- Warm Temperate East Pacific
- Tropical East Pacific
- Cold Temperate West Pacific
- Warm Temperate West Pacific
- Western Indo-Pacific
- Central Indo-Pacific
- Eastern Indo-Pacific
- Temperate North Atlantic

# Unexchanged Ballast Water - Source

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# Enforcement Regulation

# 2014 Enforcement Numbers:

- Total Arrivals – 9,345
- Discharged – 1,510
- Vessels with “Operational” Violations - 129
  - Field Inspections -21
  - GIS – 108
- Vessel responses to date – 121 (94%)
- Amended forms/clerical error/safety - 27



## 2014 Enforcement Numbers:

- Total number of noncompliant tanks - 557
  - < 200 NM – 388
  - < 50 NM – 51
  - Within 10% - 76
  - Unexchanged – 118
- Vessels with multiple violations – 13
  - Accounted for 31 occasions and 164 separate tanks



## **CA Public Resources Code section 71216:**

...a person who intentionally or negligently fails to comply with the requirements of this division may be liable for an administrative civil penalty in an amount that shall not exceed twenty-seven thousand five hundred dollars (\$27,500) for each violation. Each day of a continuing violation constitutes a separate violation.



# ARTICLE 4.9: MARINE INVASIVE SPECIES ACT ENFORCEMENT AND HEARING PROCESS

Purpose: To classify violations and penalties of MISA and establish policies and procedures CSLC shall undertake in assessing and commencing administrative enforcement actions pursuant to CA PRC section 71216

## 1. Class 1 (operational)

- **Minor** – a vessel incorrectly exchanges ballast water within 10% of the limits
- **Moderate** – a vessel incorrectly exchanges ballast water between 10-50% of the limits
- **Major (I)** – a vessel incorrectly exchanges ballast water more than 50% of the limits
- **Major (II)** – a vessel does not exchange water before discharging at receiving port

# **ARTICLE 4.9: MARINE INVASIVE SPECIES ACT ENFORCEMENT AND HEARING PROCESS**

## **2. Class 2 (administrative)**

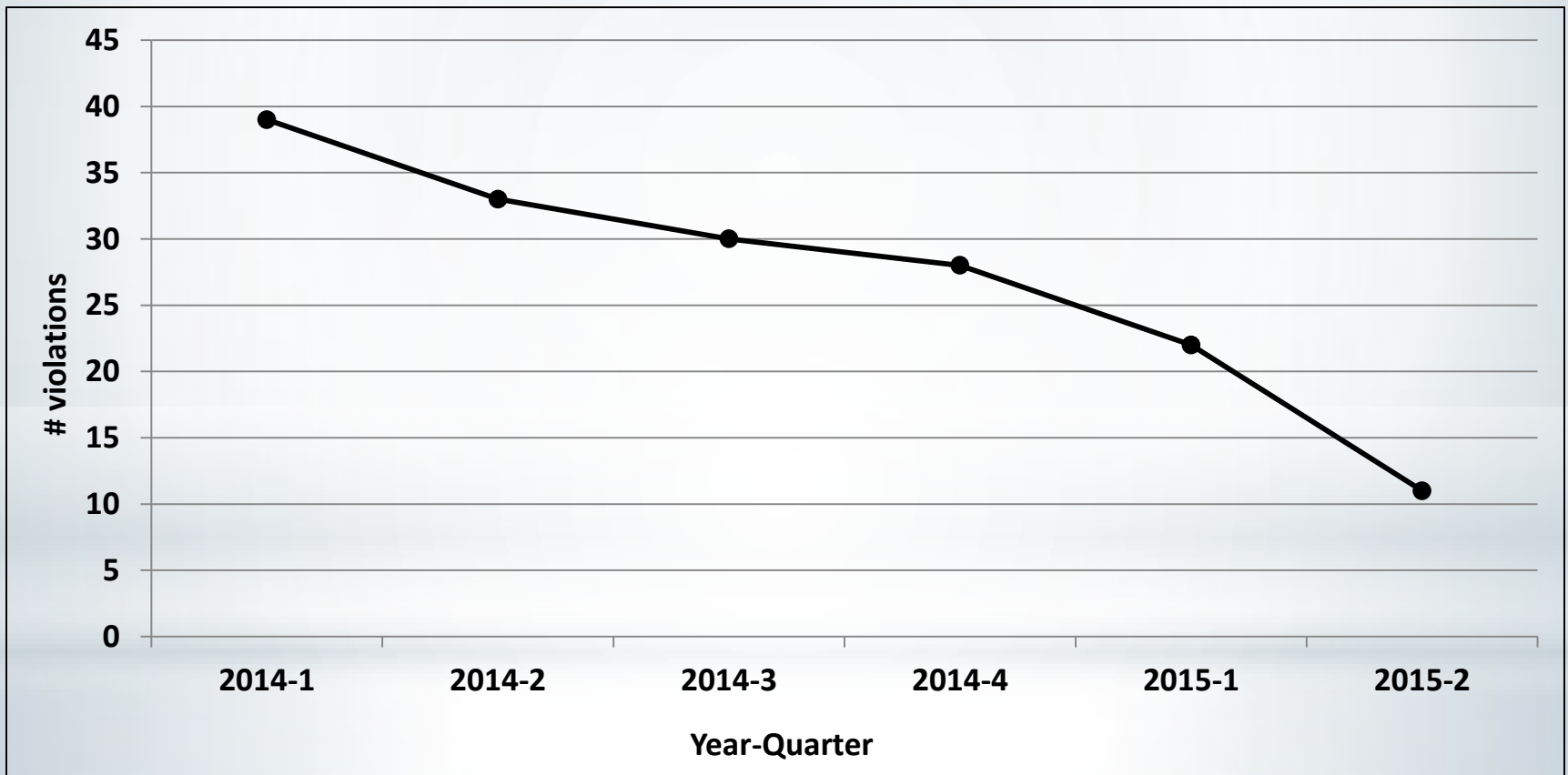
- Occurs as a result of a vessel failing to properly maintain required documents (e.g. ballast water management plan) on board.

## **3. Class 3**

- Occurs as a result of a vessel failing to submit required form (e.g. Ballast Water Reporting Form) in the given time period after receiving official notification

- Rulemaking anticipated to begin late 2015

# The Good News!



# Questions?



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